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take cognizance of its surroundings, and make mental note of them for purposes of imitation at a remote future, does not the assumption of such extraordinary powers of imitation and memory border upon absurdity? To extend the theory, which it is perfectly legitimate to do, to other classes of animals, does the tadpole, or the embryo fish (in the case of the nest-building species) also remember the exact position, structure and materials of its maternal nest? Does the young turtle remember throughout the long years of its adolescence the precise nature of the spot from which it emerged, so as to select a similar place for its own eggs? Or does the larva of an insect remember, through its various stages of metamorphosis, the exact arrangement of the egg from which it was hatched in relation to the eggs of its brother larvæ so distinctly as to be able to deposit its own eggs in a similar situation and similar order of arrangement? Why, indeed, the idea that birds are guided by 'instinct,' taking the term as interpreted by modern science, is so repugnant to a certain class of minds, or why they will persist in denying that *any evidence in its favor exists*, is to me at least incomprehensible. In short, I agree exactly with Mr. Seebohm in his footnote appended to Mr. Dixon's essay, in which he says: "I regard the word Instinct as the popular term for the mysterious impulses which scientific men call Hereditary Habit; and I think that it plays a great part, an overwhelmingly great part, not only in Bird-nest building, but in every other action of every animal, man included If Hereditary Habit have the lion's share in the production of a birds' nest, we must allow that Memory, Imitation, and a rudimentary form of Reason also play their subordinate parts." In these few words, it seems to me, we have the sum of the whole matter, and a rational answer to the question of how young birds build their first nest:

NOTES ON SOME OF THE BIRDS OF PUEBLO, COLORADO.

BY CHARLES WICKLIFFE BECKHAM.

THE following observations were made principally in the immediate neighborhood of Pueblo, Colorado, during the season of 1883.

Pueblo is one hundred and twenty miles south of Denver, at the junction of the Fontaine qui Bouille and the Arkansas River, forty miles west of the point where the latter emerges from the mountains. The surrounding country is a dreary waste of cactus, sage-brush, and soap-weed, but along the river and the creek, the vegetation is comparatively luxuriant. Naturally nine-tenths of the birds are to be found in these more favored localities. Owing to other engagements but little time could be given to collecting, and the list is therefore necessarily incomplete.

The writer is indebted to Mr. Ridgway for material assistance in preparing these brief notes.

1. *Hylocichla ustulata swainsoni* (Cab.). First observed on May 13 and by the 20th they had become very common.

2. *Merula migratoria propinqua* Ridgw. Abundant.

3. *Oreoscoptes montanus* (Townsend). Not common. Preferring, with obviously bad taste, the cactus and sage-brush of the plains to the luxuriant vegetation along the water-courses. Its song is very soft and low, as if it were disinclined to 'waste its sweetness on the desert air.'

4. *Mimus polyglottus* (L.). Rather common on the outskirts of the town. The same versatile mimic here as everywhere else.

5. *Galeoscoptes carolinensis* (L.). Not common and rather shy.

6. *Harporhynchus rufus* (L.). An abundant bird along the streams.

7. *Cinclus mexicanus* Sw. One seen in a cañon in the Greenhorn (Sierra Mojada) Mountains, thirty miles southwest of Pueblo.

8. *Sialia sialis* (L.). A female, the only one recognized, was shot on April 25.

9. *Sialia mexicana* Sw. Rather common up to the first of May. Frequently seen out on the prairie, as well as along the streams.

10. *Sialia arctica*, Sw. More abundant than the preceding. Breeding.

11. *Myiadestes townsendi* (Aud.). First observed April 22, and they afterwards became rather common up to June 1. Much on the ground, and generally somewhat shy. Heard no note at all from them at this time, but during the last week in September they were very abundant at Manitou, forty-five miles northwest of Pueblo, in Williams Cañon and the Garden of the Gods, where their delightfully sweet songs were often the only sounds to be heard in those rocky solitudes.

12. *Parus montanus* Gamb. A small party of four or five were observed April 6 in Greenhorn Cañon, thirty miles southwest of Pueblo.

13. *Thryomanes bewicki leucogaster* Bd. The only one seen, a male, was shot out of an old stunted cottonwood, containing several abandoned Magpie nests, about which the bird dodged for fully fifteen minutes before giving me a chance to shoot. This record, I believe, considerably extends the known range of the form.

14. *Troglodytes ædon* V. Common on the outskirts of town, but none were seen in the town itself.

15. *Dendroeca æstiva* (Gm.). First observed May 4, after which it became one of the commonest species.

16. *Dendroeca auduboni* (Towns.). First observed May 4. Rather common for several weeks; much on the ground in company with the Grass Finch.

17. *Geothlypis macgillivrayi* (Aud.). Rather common during the third week in May.

18. *Geothlypis trichas occidentalis* Brewst. Not uncommon. First seen May 6.

19. *Icteria virens longicauda* (Lawr.). Common in the thickets along the river. Much less shy than the eastern form.

20. *Setophaga ruticilla* (L.). A female, shot May 27, was the only one seen.

21. *Vireosylvia gilva* (V.). Not common.

22. *Lanivireo solitarius plumbeus* (Cs.). Three or four were taken during the month of May.

23. *Hirundo erythrogastra* Bodd. Common along the river and the Fountain.

24. *Tachycineta thalassina* (Sw.). Observed but once, June 10, when a dozen or more were seen.

25. *Stelgidopteryx serripennis* (Aud.). Common along the streams.

26. *Pyrranga ludoviciana* (Wils.). No females were recognized, but the males were rather common from May 15 to June 1. A mile or so up the Fountain was a place where the offal from a neighboring slaughterhouse was dumped, and the Tanagers, in company with Bullock's Oriole and the Arkansas Flycatcher, could always be found there in considerable force, feeding on the swarms of insects attracted by the odoriferous deposit.

27. *Carpodacus frontalis* (Say). Abundant everywhere.

28. *Astragalinus tristis* (L.). Common, in same flocks with the Pine Finch.

29. *Astragalinus psaltria* (Say). Common.

30. *Chrysomitris pinus* (Wils.). Common.

31. *Poœcetes gramineus confinis* Bd. Very abundant.

32. *Chondestes grammica strigata* (Say). Probably the most abundant species to be found here.

33. *Zonotrichia leucophrys* (Forst.). Not uncommon in May.

34. *Zonotrichia gambeli intermedia* Ridgw. Very abundant. A lazy, sleepy sort of a bird, using a good deal in the trees.

35. *Spizella domestica arizonæ* (Cs.). Not uncommon.

36. *Spizella pallida* (Sw.). Very abundant. Almost exclusively terrestrial. Note a wheezy rattle, hardly rising to the dignity of a song.

37. *Junco oregonus* (Towns.). Apparently not very common. Only observed in March and early in April.

38. *Junco caniceps* (Woodh.). Rather common in April. A female shot on June 1.

39. *Melospiza fasciata fallax* Bd. Apparently not very common.

40. *Melospiza lincolni* (Aud.). Common in undergrowth in company with other Sparrows.

41. *Pipilo maculatus arcticus* (Sw.). Rather common in the foothills thirty miles southwest, but only a few observed in the immediate vicinity of Pueblo.

42. *Pipilo chlorurus* (Towns.). Abundant.

43. *Zamelodia melanocephala* (Sw.). First seen May 4, after which the males became very abundant; no females at all were recognized. A nest containing four eggs was taken on June 1, and the male shot just after leaving it. Their song, almost always delivered from the topmost branch of a tree, is very full and sonorous, and very similar to that of the Robin.

44. *Guiraca cærulea* (L.). A female, shot on June 10, and a male seen were the only two observed.

45. *Passerina amœna* (Say). Common, but none were seen until May 15.

46. *Molothrus ater* (Bodd.). A male, seen on May 27, was the only one recognized.

47. *Xanthocephalus icterocephalus* (Bp.). A large flock was several times seen a mile and a half up the river.

48. *Agelæus phœniceus* (L.). Abundant. A colony of them breeding within the 'city limits.' A very comprehensive term as applied to western 'cities.'

49. *Sturnella neglecta* Aud. Abundant. When I first heard the note I had no idea from what sort of a bird it proceeded.

50. *Icterus bullocki* (Sw.). Very abundant. Before the leaves appeared, their compactly woven nests (old ones, of course) were very conspicuous objects on the cottonwoods, bordering the Fountain.

51. *Scolecophagus cyanocephalus* (Wagl.). Common. Found breeding.

52. *Pica rustica hudsonica* (Scop.). Very abundant. The Magpie has a very bad name out here, but like the Devil, is not, perhaps, 'as black as he is painted.' Hundreds of them breed in the cottonwood a mile or two down the river, and their immense globular nests, made exclusively of sticks, are everywhere to be seen. They begin laying, I think, about April 15, and a month later the young are able to fly. Seven or eight eggs appear to be the usual number to a clutch.

53. *Cyanocitta stelleri macrolopha* (Bd.). A party of seven or eight were seen on Sept. 24 in the immediate vicinity of town. They were perfectly silent and acted generally as if they had been doing something that they ought not to have done, and were anxious to get back to the foothills. In the Greenhorn Mountains, and at Manitou, I found them very abundant. The ranchmen in the former locality accuse them of robbing hen's nests, and foraging on the garners where grain is stored.

54. *Eremophila alpestris leucolaema* Cs. Very common. The specimens taken are provisionally referred to this form, although, according to Mr. Henshaw, there are two distinct races whose range includes Pueblo.

55. *Tyrannus carolinensis* (L.). Common.

56. *Tyrannus verticalis* Say. Very abundant from May 6 to September 24.
57. *Contopus richardsoni* (Sw.). Common in open places.
58. *Empidonax hammondi* (Xantus). Common.
59. *Phalænoptilus nuttalli* (Aud.). But one seen, May 24.
60. *Chordeiles popetue henryi* (Cass.). Common during the first ten days of June.
61. *Picus pubescens gairdneri* (Aud.). Not common, apparently, as but two were seen. One of them, a female, shot May 26, had but one leg; the loss of the other was doubtless due to some accident.
62. *Melanerpes erythrocephalus* (L.). First observed on May 15. A week later they were common both in the town as well as in the country, in fact, everywhere except on the prairie.
63. *Melanerpes torquatus* (Wils.). A male, shot May 13, was the only one seen. Very wary; followed him at least half a mile before I could get a shot.
64. *Colaptes auratus mexicanus* (Sw.). Abundant.
65. *Geococcyx californianus* (Less.). Alderman Morse of Pueblo informs me that he has found the Chaparral Cock twenty miles down the river.
66. *Asio accipitrinus* (Pall.). A male, the only one observed, was shot near the river on April 1.
67. *Bubo virginianus subarcticus* (Hoy). Saw several in captivity, captured near Pueblo.
68. *Speotyto cunicularia hypogæa* (Bp.). Common in the prairie dog colonies near town. I have wasted a great deal of energy, patience, and time, vainly trying to get a shot at this very knowing bird. They always managed to keep a minimum distance of six feet or so between themselves and the ultimate range of my gun.
69. *Tinnunculus sparverius* (L.). Abundant. Not at all wary.
70. *Haliaëtus leucocephalus* (L.). Several were seen at Manitou in September. None noted at Pueblo.
71. *Cathartes aura* (L.). Observed two or three times near Pueblo.
72. *Zenaidura carolinensis* (L.). Excessively common.
73. *Ardea herodias* L. A mounted specimen in Corder's drug store, Pueblo, is said to have been shot near the town.
74. *Oxyechus vociferus* (L.). The Killdeers were quite common along the river and the Fountain, where they were breeding.
75. *Podasocys montanus* (Towns.). Not uncommon out on the dry and sandy 'prairie.'
76. *Ereunetes pusillus* (L.). But once observed, May 17, when a male was shot out of a small flock on the river.
77. *Totanus flavipes* (Gm.). But one specimen, shot May 8.
78. *Tringoides macularius* (L.). I have never found the ubiquitous 'Peet-weet' anywhere as abundant and noisy as here.
79. *Numenius hudsonicus* Lath. Mounted specimens of this and the next, in Corder's drug-store, are said to have been taken near Pueblo.

80. *Recurvirostra americana* Gm.
 81. *Rallus virginianus* L. But once observed—May 20—in a marsh near town.
 82. *Grus canadensis* (L.). One recently shot was seen in market in South Pueblo.
 83. *Anas boschas* L. Abundant in April and September on the river.
 84. *Chaulelasmus streperus* (L.). One was shot out of a flock of five on May 15.
 85. *Querquedula discors* (L.). Common in May and September on the river.
 86. *Querquedula cyanoptera* (V.). Not uncommon in May on the river.
 87. *Nettion carolinensis* (Gm.). Common on the river in April and September.
 88. *Erismatura rubida* (Wils.). A male, the only one seen, was shot on a pond May 11.
 89. *Lophodytes cucullatus* (L.). Alderman Morse of Pueblo informs me that he shot one on the river here several years ago.
 90. *Mergus merganser americanus* (Cass.). Common in April on the river.
 91. *Pelecanus erythrorhynchus* Gm. Mr. Bagley of Rye, Pueblo Co., Col., has a bill of one in his possession which he shot on a large artificial lake near Pueblo in 1880.

A STUDY OF THE SINGING OF OUR BIRDS.

BY EUGENE P. BICKNELL.

(Continued from Vol. I, p. 332.)

Spizella monticola. TREE SPARROW.

THIS hardy Sparrow, though provided through our winters with an unfailing supply of seeds from the catkins of swamp alders and the dried flower-clusters of golden-rods and other withered weeds which reach above the snow,* seems nevertheless

* The number of wild plants and trees that keep their seed through the winter is greater than the casual observer would be likely to believe. During a recent winter I gave some attention to this subject, noting down all the trees and plants found with seed. No systematic or extended search was made, yet a few midwinter walks gave me a list of about one hundred and fifty names. Some of these were of scarce plants, or those the fruit of which was hardly adapted for a bird's food, but many were of common and widely-spread species, which were well suited to form winter staples for our granivorous birds.